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What is a LAKE?
ASKED THE TEACHER
IT'S A HOLE IN THE
WASH BOILER. Said
A LOWICIOUS,

S O L D E R I N G :

HOW TO DO IT.

By

Horace Van Sands.

Price 50 cents.





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P R E F A C E.

The value of this little book is far more than its price, 50 cents.

Any one who possesses it, has a means of earning a good living in their possession, also, if they never use the art of soldering as a means of earning a living the information is still worth much to them because they are sure to make use of it.

Every boy and girl in school should learn to solder; every teacher should learn and every class room should have a soldering iron.

I

If the chemistry is right, any one can solder. If it is not right soldering is impossible. Any one can solder, the first time, provided they create the proper chemical conditions.

The soldering iron is copper. When you want to change its shape, or make a longer, slimmer point, do not file it into the shape desired. Just heat it, cherry red and pound it into the shape desired, with a hammer. It is very easy to do it.

If the iron is "tinned," on its point, it will, when heated, pick up a drop of solder. If it is not "tinned," it won't even melt the solder, let alone picking up a drop of it, no matter how hot it is heated.

A soldering iron, unless "tinned," won't work, because the hot copper forms a crust of tarnish on its surface, which insulates the heat enough, so that it won't melt solder, but when it is "tinned" it will melt solder and pick up drops of solder and work beautifully.

Tinning an iron, consists of giving it a plating of solder and here we come to the brick and file, also to the "killed" acid.

No definition of a brick is necessary as every one knows what a brick is, also

a file; but the "killed" acid needs explanation.

Raw Muriatic acid is for sale everywhere and is very cheap. Ten cents' worth is enough. Many druggists dilute it with water. If the druggist saws off on you, diluted acid, it won't work.

Now then, having your "raw" acid, you proceed to "kill" some of it. Not all of it, because you need some "raw" acid too in your business.

Get yourself two glass milk bottles, and cut two shivers of wood long enough to reach to the bottom of your two bottles. Put one in each bottle.

Next get some zinc. Zinc is a metal. Some scraps of sheet zinc can be bought at the stove store; or a small piece can be bought at the hardware store. Ten cents' worth will be as much as you will need for a long time.

Put some of your zinc in one of the bottles and pour in some of your "raw" acid. The acid will boil and heat the bottle as it eats up the zinc and will give off gas, which is too rich to breathe without coughing. The open air is a good place. When the acid won't eat any more zinc, it is "killed." It must be "killed" dead, and the way to be sure

of it, is to keep some zinc in excess, always in the bottom of the bottle.

The other bottle, is for "raw" acid and the two sticks are used to apply the acid to the work you are doing.

About a tablespoonful of acid is enough to "kill" at a time; but do not use a spoon to measure the "raw" acid in, also don't burn your fingers or holes in your shirt sleeves with it.

The reason for using wooden shivers, is because you have got to use something to transfer a drop of acid from the bottle to the job of work. No one ever uses glass rods for that purpose. It is not known why they don't, but they don't; though of course glass rod is the best.

When the ends of your sticks get eaten up by the acid, in a few weeks they will be that much shorter and when they get too short either splice on new pieces of stick, or throw them away and start over again with new sticks.

Now then provide yourself with some solder; place your brick, about level and lay your solder on the brick. Always keep your solder on a brick and have the brick level; then, when a drop of melted solder separates itself from the main body of solder, and also escapes the hot

iron, it won't roll off the brick, because it is on the level.

Next heat your soldering iron. It don't make any difference how hot, you can't melt it; but if you get it red hot, wait until the red dies. The best heat is just before red it reached.

"You 'tin" the iron this way. Having the iron hot, you lay it on the brick, near the solder, clean the point bright, with the file. Put on the cleaned point with the stick, some "killed" acid from the bottle, then with the point of the hot iron, you melt off a drop of solder on to the brick, then apply more "killed" acid to the point of the iron. Next melt the drop of solder again, with the point of the iron and spread the drop of solder over the point of the iron with the file, just as if you were rubbing it in, or filing it in.

The "tinning" will last a long time, as every soldering operation keeps up the "tinning." But if the iron is heated too hot, the "tinning" will be burned off.

The chemical action is this. The "killed" acid is a saturated solution of zinc. The heat of the iron, causes it to fly into steam. The heat, however, does not do that to the zinc and it fluxes on the sur-

face of the iron. It plates the iron with zinc.

Solder has a great affinity for zinc. "Great affinity" in this case means that melted solder will fly together with zinc as quickly as an explosion if given the chance.

Now the soldering operation is almost explained right there.

The metals to be soldered together, are simply cleaned by scraping with a knife, or cleaned with the raw acid. Then the "killed" acid is applied and a drop of solder is picked up on the point of the iron and applied. If the metal is clean, the acid right, and the iron "tinned" and hot, the amateur will do as perfect a job the first time, as the professional will do, and later will do much better work, because they know why, and can therefore use judgment.

Iron, brass, copper, lead, galvanized iron, tin plate, in fact all metals in common use can be soldered together.

Aluminum has no affinity for zinc, therefore it cannot be soldered.

When a leaky galvanized iron wash tub is to be soldered, clean the place with the "raw" acid, do not scrape at all. The "raw" acid in cleaning the

spot, also "kills" itself, as galvanized iron treated with zinc. Then wipe the spot dry with a rag. Apply "killed" acid and solder.

To solder a copper bottom, on to a galvanized iron wash boiler, clean the same way with "raw" acid and wipe dry, then apply the "killed" acid and solder. You will remember how you "tinned" your soldering copper, it was hot, while the copper bottom is cold, therefore it will solder up as easily as any other metal.

To solder granite iron or enameled iron, simply break away the granite enamel around the hole, clean with the "raw" acid, wipe dry with a rag, and solder with the "killed" acid.

Now we come to the "Tinker's Dam." Every one has heard of the tinker's dam, few know what it is.

Dams are used to hold back water in a stream. Dams are used to hold back liquids. A tinker's dam is a dry cloth, with the accent loud and clear, on the dry. A wet cloth and melted solder make an explosion. The solder shoots if it hits a wet cloth, but a dry cloth simply dams it.

If the hole, or crack, or crevice, is so

large, the solder runs through before it sets. Arrange a "tinker's dam" to hold it until it sets.

Where two pieces are very small, get a drop of melted solder on your iron, lay your iron down on the brick, then hold the two pieces to be soldered in the melted drop of solder and take it away from the heat of the iron. Be chewing a tooth pick at the time, and as soon as the operation is complete, cool it, like the Chinese dampen the ironing, because, if you try to hold it with two hands until it cools and sets of itself, you are doing a nerve testing act. Having the water running and ready is also another way, not so handy, because in making the step to the running water you will probably step on the cat, or stumble over something, as you don't dare to take your eyes off the job. The tooth pick method is recommended.

Soldering the spout onto a coffee pot, the way to do, and this principal holds good all through the art of soldering: is to fasten it with a drop of solder at one corner, then with the thumb and finger, spring it to the exact shape, and spot to fasten the other corner: tack it down with a third dab of solder, somewhere

else, then look at it, like a lady looks at herself in a looking glass to see if her hat is on straight, and if the spout is on straight, then, smile to yourself, and proceed to solder it all the way around.

When things must be soldered accurately together, tack them in spots first.

Where they only fit together in spots, tack them there first, then spring or force together and solder.

It is necessary to occasionally smile when soldering if the best work is to be accomplished. Men who tame wild animals never smile while working at their trade, but soldering is different.

When you go into the hardware store to buy some solder, if the village wag of your neck of the woods happens to be the salesman, he will ask you if you want hard, or soft solder.

Wag right back at him and say "either," pronouncing the word "either" the other way from the way he pronounces it.

He hasn't got any hard solder nor soft solder for sale anyway and could not tell you what they are.

Solder is "half and half." Half tin and half lead, specific gravity measurement, which means half and half in

bulk.

Tin is much lighter in weight than lead and requires a higher temperature to melt it. The "half and half" melts at the right temperature.

Wire solder costs more than bar solder. Both are exactly the same alloy.

Soldering irons are sold by the pound. A number one iron weights one pound, a number two, two pounds. A little half pound copper is heavy enough for soldering up holes in leaky things; but a number two is required for large work.

Every house has some soldering to do.

Every house has something to solder and keeps having.

It requires no salesmanship to go and get it. All that is necessary is to go and ask for it. Take it home, do it, bring it back and get the money.

They will pay the prices gladly and be satisfied too. Anyone can make a good living at it, anywhere anytime.

The prices to charge are like this: 35 cents. 50 cents, 75 cents, one dollar and up. It is most all profit.

It is worth one dollar to solder a baby's bath tub; 75 cents to one dollars to solder a large galvanized iron washtub. It is worth two dollars to solder on a handle

of a plated or solid silver pot. A neat job is no trick, you will be able to do it. If a rough spot is made smoothe it with a sharp knife.

Get some cards printed and go after the work. All it requires is to go and get it, which any one can do.

Perhaps your local printer will get you up some cards. You need cards however, because when you take a job to do, people want your card.

It requires less than \$2.00 to start, you buying the tools, materials and solder anywhere. Perhaps you have a soldering iron now and do not need to buy one.

It is a good opening for women, boys and men too.

Get busy, get happy, make several dollars a day. Don't be afraid to charge good prices. They will be paid gladly and all the future work given to you. It is mostly all profit.

Yours truly,
HORACE VAN SANDS...

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